# QIBA Dynamic Contrast-Enhanced (DCE) MRI Biomarker Committee (BC) Call

Monday, October 28, 2019 at 11 a.m. (CT)

*Call Summary*

**In attendance**                                                                                     **RSNA staff**

*Hendrik Laue, PhD (Co-Chair)*    Cristina Lavini, PhD         Nancy Obuchowski, PhD    Joe Koudelik

Wei Huang, PhD                   Ho-Ling (Anthony) Liu, PhD    Qing Yuan, PhD           Susan Stanfa

Hyunki (Harrison) Kim, PhD, MBA


**Profile Progress**

- Brief discussion re: Peled S, et al. **Selection of Fitting Model and Arterial Input Function for Repeatability in Dynamic Contrast-Enhanced Prostate MRI**. *Academic Radiology*, 2018
    - Found that although goodness-of-fit criteria favored the four-parameter extended Tofts-Kety model with the Bolus Arrival Time (BAT) correction included, the simplest two-parameter Tofts-Kety model overall yielded the best repeatability scores
    - Due to this test-retest data on prostate repeatability at 3T, Claims 2a and 2b were added to the Profile
    - Genetic Kinetic Model (GKM), individual Arterial Input Function (AIF), 1.5T to be added to Claim 2b

- Discussion regarding B1-mapping in the Profile
    - There are currently no publications re: genuine B1-mapping in prostate; due to the dearth of test-retest data, Profile users cannot be required by the Claims to perform B1 correction
    - B1-mapping was removed from Claims and Section 4.2: "Assessment Procedure: B1 Mapping" was removed
    - It was also noted that there are no test-retest data available to calculate the DCE-MRI imaging biomarker parameters, $K^{trans}$ using the GKM or the extended GKM software tool
    - B1 issues are broached in Profile discussion sections and it will be noted that Profile user may obtain better results as a result of performing B1 correction

- Section 3.5: Periodic QA
    - The following text was added in re: to phantom imaging for R1: "The phantoms will be available at the NIST phantom library" and the URL to be inserted when available
    - Refers user to Section 4.1: Assessment Procedure: R1/T1 Mapping accuracy for requirements; it recommends that a static T1 phantom be used and a link to the evaluation software and manual in the QIDW is included

- Discussion re: Dr. Lavini's in vivo testing study
    - B1 sequences were mapped using a T1 correlation
    - Comparison graphic of B1 corrected and uncorrected scans was shown ("brain averaged accuracy (all ROIs)" vs. "phantom averaged accuracy (all ROIs)")
        - 3T uncorrected, 3T corrected and 1.5 T results were included for brain and phantom

    - Results suggested that B1-inhomogeneity in a phantom scan is more exaggerated than in a clinical brain scan
    - It was noted that using a phantom for R1 testing is more sensible than using true tissue; B1 correction with a human brain scan improves results only minimally
    - Dr. Lavini's study found that T1 errors with a phantom will be greater than with true tissue; T1 error has a much larger impact on a scan than does B1 correction

- During the Oct. 28 call, all BC members were asked to review Section 3 of the latest version of the **Profile**
- To avoid making edits to the text itself, feedback/comments should be provided using "**Suggested Edit Mode**;" comments can also be added in the margin if desired
- Section 3 updates to be reviewed during the next BC call on November 11th

**Reminder:**
- Please RSVP for the Dec. 4 QIBA Working Meeting during the 2019 RSNA Annual Meeting
- Please sign up for the RSNA 2019 MTE Sessions at the QIBA Kiosk:
  - Type in your name next to the presentation time slot that works for you (we encourage that each 30-minute time slot is filled by at least one committee member)
  - Simply close out of the document (there is no save button and changes will automatically save)

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**Next call**: Wednesday, November 6th, 2019 at 11 a.m. CT (1st & 3rd weeks of each month)

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